

WHAT IS CLAIMED

1. A method for removing line-like defects from an image by providing image data in digital form, analyzing segments of the image data as groups of pixels,
5 detecting line defects in the image by application of a line detector and adjusting the image data to correct the detected line defects within the determined limits.
2. A method for removing line-like defects from an image by providing image data in digital form, analyzing segments of the image data as groups of pixels,
10 detecting line defects in the image by application of a local radial angular transform and adjusting the image data to correct the detected line defects within the determined limits.
3. The method of claim 1 in which the line detector detects a line according to at
15 least one characteristic from the group comprising line lightness higher than the surroundings, line lightness lower than the surroundings, line contrast with respect to surroundings, line orientation with respect to the image borders, line edge sharpness, line width or line length.
4. The method of claim 2 in which the line detector detects a line according to at
20 least one characteristic from the group comprising line lightness higher than the surroundings, line lightness lower than the surroundings, line contrast with respect to surroundings, line orientation with respect to the image borders, line edge sharpness, line width or line length.
- 25 5. The method of claim 1 wherein the image is a color image.
6. The method of claim 2 wherein the image is a color image.
- 30 7. The method of claim 1 wherein the image data is provided in a color space format that includes a brightness value.

8. The method of claim 2 wherein the image data is provided in a color space format that includes a brightness value.

5 9. The method of claim 2 wherein a geometric pattern of groups of pixels is selected and used to detect line-like structures in image data.

10. The method of claim 9 wherein the geometric pattern comprises hexons.

10 11. The method of claim 8 wherein a geometric pattern of groups of pixels is selected and used to detect line-like structures in image data.

12. The method of claim 11 wherein the geometric pattern comprises hexons.

15 13. The method of claim 9 wherein the hexons are laid over the image.

14. The method of claim 13 wherein a modulus of the transformation coefficient, c_3 , is used to indicate the presence of a line-like feature in the image under the hexon over the image.

20 15. The method of claim 9 wherein brightness differences within the groups of pixels are used to identify line-like features.

25 16. The method of claim 1 wherein an operator of the method selects the type of line defect to be corrected by selecting from among the group consisting of a) light line defects, b) dark line defects, and c) both light line defects and dark line defects.

30 17. A method of correcting line-like defects in a single still image without requiring the defects to be manually delineated, the method comprising providing image data in digital form, analyzing segments of the image data as groups of pixels,

TO 9040 62400660

automatically detecting line defects in the image, and adjusting the image data to correct the detected line defects.

5 18. The method of claim 17 wherein automatically detecting line defects in the image is effected by application of a local radial angular transform.

10 19. The method of claim 17 wherein automatically detecting defects in the image is determined by a program which analyzes for line-like patterns and their relative darkness or lightness with respect to surrounding pixels or surrounding pixel groups.

15 20. The method of claim 17 wherein automatically detecting defects in the image is determined by a program which analyzes for line-like patterns and their contrast with respect to the surroundings.

20 21. The method of claim 2 wherein an operator adjusts two contrast limits L_1 and L_2 to restrict what regions of the image are to be selected as a defect area.

25 22. The method of claim 2 wherein only values of a lines strength metric, $|c_3|$, satisfying the relationship $L_1 \leq |c_3| \leq L_2$, where $0 < L_1 < L_2 \leq |c_3|_{\max}$, are considered to represent a defect, wherein L_1 defines a lower contrast limit and L_2 defines an upper contrast limit.

23. The method of claim 1 wherein the operator marks a selected area of the image on which to practice the method.

24. The method of claim 2 wherein the operator marks a selected area of the image on which to practice the method.

25. The method of claim 2 wherein a threshold value to determine limits on detected line defects to be treated is applied to data from application of a local radial angular transform.

5 26. A computer containing software and hardware that enables execution of the process of claim 1.

27. A computer containing software and hardware that enables execution of the process of claim 2.

10

28. A method for removing line defects from a still image by providing image data in digital form, analyzing segments of the image data as groups of pixels, detecting line defects in the image, detecting line defects in the image within a specified range of widths without manually designating the spatial location of the line defects, and adjusting the image data to correct the detected line.

15

29. A method for removing line defects from a still image comprising providing image data in digital form, detecting line defects in the image of a specified brightness, as either higher or lower brightness than a predetermined value, compared to surrounding pixels without manually designating the spatial location of the line defects, and adjusting the image data to correct the detected line.

20

30. A method for removing line defects from a still image by providing image data in digital form, detecting line defects in the image of a specified contrast compared to surrounding pixels without manually designating the spatial location of the line defects, and adjusting the image data to correct the detected line.

25

31. A method for removing line defects from a still image by providing image data in digital form, detecting line defects in the image of a specified range of sharpness without manually designating the spatial location of the line defects, and adjusting the image data to correct the detected line.

30

FOIA b 7 - D